

THE ZOOLOGICAL RECORD.

The Zoological Record, Volume the Fortieth; Relating Chiefly to the Year 1903. Edited by D. Sharp. (London: The Zoological Society, 1904.) Price 3os.

YEAR by year this invaluable publication appears with commendable regularity, and year by year its bulk steadily increases, the bulk of the present issue being nearly double that of its predecessor of forty years ago. Hitherto the subscribers have yearly obtained more for their money, but there are limits beyond which even the generosity of a great scientific society cannot go, and it has consequently been decided, although with reluctance, that in future the price of the annual volume must be increased. The bulk of the present volume has been somewhat diminished by printing it on thinner paper than its predecessors; and, although this innovation may have been unavoidable in order to bring the weight within the limits laid down by the Post Office for transmission abroad, it cannot be said to be altogether an improvement, as in places the type shows through in a decidedly obtrusive manner.

Whether such a radical alteration was really inevitable may perhaps be doubtful, for it is quite evident that a large amount of space might be saved if a uniform plan were adopted throughout the work. For instance, in the section on mammals 385 titles are recorded and their subjects epitomised in a space of forty-two pages, whereas in the section on echinoderms no less than 105 pages are taken up in dealing with 339 papers.

If such prolixity is necessary in the one case, it is equally essential in the other; and, conversely, if the brief mode of treatment will suffice in one instance, it should be adopted in the other. Much space might also be gained, without any loss, in the sections on reptiles and fishes, as well as in certain others.

This lack of uniformity in treatment is, in our opinion, the one point in which this "Record" compares unfavourably with the one issued by the committee of the "International Scientific Record"; and it is high time that it was amended. Surely the editor is strong enough to keep his contributors in hand, and to make them do the work his way and not their own. As an instance of this slackness of the guiding hand we may refer to the fact that in one of the sections the recorder has been allowed to adopt the spelling *Meiocene* and *Pleiocene*, which is both wrong (on the supposition that we form our scientific names through the Latin) and pedantic. If any alteration in orthography of this nature were permitted, it should be the substitution of *Pleistocene* for *Pleistocene*; but if such a change were made it should run through the entire volume.

The comparatively early date at which many of the sections are now sent to press renders it impossible to include so many of the papers for the year to which they specially refer as was formerly the case, but this is a matter of no great moment, so long as such papers make their appearance in the volume for the following year.

Mistakes and omissions there must of course be; but these seem to be few and far between. We notice, however, in the mammal part that *Condylarthra* has been put in place of *Amblypoda*, while in the concluding paragraph of the first page of his introduction to the insects the editor is guilty of a blunder which should cause him to be lenient to the shortcomings of his contributors. Whether he can escape blame for errors like the omission of a reference number in the penultimate line of p. 21 of the mammal part may, however, be open to question.

Taken all in all, the volume is a marvellous production, both as regards accuracy, fulness, and the comparatively early date of its appearance; and the editor and his staff are entitled to the best thanks of the zoological world. When we have said that the "Zoological Record" still stands without a rival, we have said sufficient.

R. L.

OUR BOOK SHELF.

A Synonymic Catalogue of Orthoptera. By W. F. Kirby. Vol. i. Orthoptera Euplexoptera, Cursoria, et Gressoria. (Forficulidæ, Hemimeridæ, Blattidæ, Mantidæ, Phasmodæ.) Pp. x + 501. (London: the Trustees of the British Museum, 1904.)

The value of such a general synonymic catalogue as this work is obvious, but the increased interest which has been taken in Orthoptera in recent years, and the rapidly accumulating mass of literature, has made a complete and systematic catalogue of this order an urgent necessity. The work is upon the same model as the author's previous catalogue of dragon-flies. The species are numbered, though no particular order appears to have been followed; the distribution is given in the margin, and synonymy is attached, although a complete list of references is not given in every case. One of the most prominent features of the list is the conscientious manner in which the author refuses to admit as synonymous such names as to the absolute identity of which he is not personally convinced, resulting in an apparent multiplication of species. Thus, on pp. 30 and 31, we find *Spongiphora parallela*, *S. therminieri*, *S. dysoni*, and *S. croceipennis* all entered as separate species, though nowadays there are few who doubt their identity, and fewer still who can discriminate between them. Again, on p. 2, *Diplatys gerstaeckeri* and *D. longisetosa* are regarded as separate, although it is impossible to distinguish them. To such an extent does the author carry this principle, that he admits names published with figures only, such as *Pygidicrana huegeli*, Sharp, and even *Ancistrogaster petropolis*, Wood, based upon a reference and an illustration in a popular work. But yet he relegates *Psalis indica*, Hagenb., var. *minor*, Borm., as a synonym of *P. guttata*, Borm., although the describer insisted upon the extreme variability of the older known species. But questions of nomenclature and classification are of necessity controversial; many may disagree with the author's arrangement of the genus *Labidura*, in which a number of insufficiently described so-called species are regarded as valid, only on account of the difficulty of proving their identity with the excessively variable and universally distributed *Labidura riparia*, Pallas.

Otherwise, changes of well-known names are few. We are glad to see *Blatta* retained, at the expense of *Stylopyga* for *orientalis* and not for *germanica*.

Hololampra, Saussure, 1864, replaces the more familiar *Aphlebia*, Brunner, 1865.

But this catalogue should be received less with criticism than with gratitude to the painstaking author, and we hope the second volume will appear at an early date; it will doubtless include such omissions as have been unavoidable in the first volume, owing to the time necessary for publication.

M. B.

Percentage Tables for Elementary Analysis. By Leo F. Guttman, Ph.D. Pp. 43. (London: Whittaker and Co., 1904.) Price 3s. net.

THIS book is only intended to facilitate the calculation of the results of an ordinary organic analysis, and its title, therefore, is somewhat misleading. It is stated that "the tables have been carefully calculated and checked, they are therefore absolutely accurate." After this statement, nothing is left to us but to see if they are likely to be useful. After careful consideration of this question we are compelled to give an unfavourable reply. If we have the analytical result that 0.1173 gr. of a substance gave 0.2869 gr. carbon dioxide, we can, in the ordinary course of things, by looking out the logarithm of 0.2869, adding the easily remembered logs. of 12/44 and of 100, and subtracting the log. of 0.1173, get the log. of the percentage. But according to the tables before us, we look out a number corresponding to 0.117 and 0.28. We then look again for a number corresponding to 0.118 and 0.28. We subtract the two numbers, multiply by 0.3 by means of another table, and subtract this result from the first number looked out. We next find a number corresponding to 0.117 and 0.69, divide by 100 and add this result, and thus, after four references to tables, two arithmetical operations in the head, one subtraction and one addition on paper, we get our percentage. Appeal to a chemist constantly engaged in organic analysis has only confirmed the view that these tables are unlikely to save time or to promote exactitude in the calculation of organic analyses.

A. S.

How to Photograph with Roll and Cut Films. "The Amateur Photographer" Library, No. 30. By John A. Hodges. Pp. xviii+120. (London: Hazell, Watson, and Viney, Ltd., 1904.) Price 1s. net.

THE ever increasing number of photographers and more especially amateurs, who work with either roll or cut films, will find in these pages all the necessary information for the production of pictures. The author does not pretend to have written a treatise on the whole art and science of photography, but he has given a straightforward account of the various operations that have to be completed to ensure good results. The treatment is well suited for amateurs, and the numerous well reproduced illustrations serve admirably to render many points clear.

The Telescope. By Thomas Nolan. (New York: D. Van Nostrand Company, 1904.) Price 50 cents.

THE first edition of this small treatise on the elementary principles of optics as applied to telescopes appeared in 1881. In the present issue the author has left this matter practically as it first appeared, with only one or two minor corrections, but has added a chapter describing in a brief manner the advances that have since been made. At the end is also given a bibliography relating to the telescope, which will be of service to those who wish to study more in detail different branches of the subject to which slight references only have been given. The book is published in the Van Nostrand Science Series, and should prove a useful addition.

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LETTERS TO THE EDITOR.

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The Infection of Laboratories by Radium.

IN a recent attempt in the physics building of McGill University to make electroscopes with a very small natural leak, repeated failures were encountered. The rate of discharge of several instruments, carefully made, was found to be about sixty to one hundred times as large as that obtained by Mr. H. L. Cooke two years earlier in the same building. At first it was supposed that the insulation of the sulphur bead was defective. But the natural leak was large and unaffected when the upper support of the sulphur bead was raised to a higher potential than the gold leaf system, so that the insulation was not at fault. Nor was the rate of discharge altered when the electroscope was entirely surrounded by lead one inch thick. Removal to another building produced no effect on the leak of the electroscope. It appeared probable that the trouble was due to the radio-activity of the materials from which the electroscope was made. A rude instrument, made in a private house with a tobacco tin, the amber mouthpiece of a pipe, and a cork, was found to give better results than the most carefully constructed instrument in the physics building. Some electroscopes were next made in the chemistry building, using materials which had never been into the physics building. Instruments with a very slow rate of discharge were now easily manufactured. These were used to test materials from various parts of the physics building, and it was found that all were infected with excited activity. Sheets of mica, lead foil, iron, zinc and tin were all active, even when taken from drawers or cupboards.

Of the substances tested, the only one which showed no activity was some thin Dutch metal leaf kept between tissue paper in a closed drawer. About 90 per cent. of the excited activity could be removed from the metal sheets by strong hydrochloric acid, but the activity was transferred to the solution. It was also possible to volatilise a portion of the deposit by raising the metal sheet to a red-heat in a Bunsen flame. Both α and β rays were detected, but it was difficult to measure their exact proportion. The natural leak of an electroscope was increased to a measurable extent when a mica window was replaced by one cut from a sheet of mica kept in the physics building.

The difficulty of conducting radio-active experiments in rooms where strong preparations of radium were present was early observed by Madame Curie, and later by Elster and Geitel, but the present experiments seem to show that the effect may be widely spread. The emanation from radium used in the large physics building has passed by convection and diffusion into various rooms. In a few days each fresh supply of emanation is transformed into the rapidly changing substances radium A, B, and C. The further changes of the products of radium have been investigated by Prof. Rutherford, and described by him in his Bakerian lecture (*Phil. Trans.*, vol. cciv., pp. 169-219), and in a recent letter to NATURE (February 12). In the former he has pointed out that bodies exposed to the air in the open will be covered with an invisible film of radio-active matter of very slow rate of change, and that the strong radio-activity observed in a room in which radium preparations have once been used is probably due to the deposit on the walls of the room of this slowly decaying matter from the emanation. In his letter to NATURE, he has shown that radium C gives rise to radium D, and that the further change to E is rayless in character and attains half value in forty years. The further change to F emits β rays, and reaches half value in six days, whilst the change from F to the final product is accompanied with α rays, reaching half value in 150 days.

The α and β rays emitted by the coating on the materials in the physics building are doubtless due to the changes above mentioned. If the supply of emanation were arrested at the present date, the activity already deposited would rise to a maximum in two or three years, and then gradu-